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Phytobezoar in Meckel's diverticulum: A rare cause of small bowel obstruction

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ABSTRACT

INTRODUCTION: Meckel's diverticulum (MD) is the prevailing anomaly of the gastrointestinal tract, found in about 2% of the population; it rarely gives rise to symptoms and its discovery is usually accidental. Phytobezoar is a concretion of poorly digested fruit and vegetable fibres that is found in the alimentary tract and rarely can be the cause of small intestinal obstruction. Herein we report a rare case of intestinal obstruction due to phytobezoar formation into a MD.

PRESENTATION OF CASE: A 50 year-old patient, was admitted to author's institution with an history of abdominal pain, nausea and multiples episodes of vomiting. Plain X-ray showed dilated small-bowel loops. Computed tomography (CT) revealed jejunal loops with air-fluid levels. The patient underwent explorative laparotomy where we found a giant Meckel's diverticulum, filled by a phytobezoar that caused small bowel compression. We performed a segmental ileal, resection, containing the MD. The histological exam confirmed Meckel's diverticulum.

DISCUSSION: Bowel obstruction due to a phytobezoar in a Meckel's diverticulum is rare: only 7 cases have been reported in literature. MD complications are rare and phytobezoar is one of them with only few cases described in literature.

CONCLUSION: The conventional x-rays studies were inconclusive whereas abdominal contrast enhanced CT scan is mandatory in these cases.

1. Introduction

Meckel's diverticulum (MD) is the most common congenital malformation of the gastrointestinal tract and it results from an improper closure and absorption of the onphalo-mesenteric duct.[1]

In the majority of patients, Meckel's diverticulum is asymptomatic. Whether symptoms occur, they are normally related to complications like diverticulitis, tumors or intestinal obstruction.[2,3]

The term Bezoar identifies a rare condition characterized by the accumulation of different material in the gastrointestinal tract, in particular in the stomach.[4–6]

The following article reports a case of intestinal obstruction due to phytobezoar impaction into a Meckel's diverticulum.

2. Case presentation

A 50 years old Chinese man with a past medical history of diabetes Type II on treatment with oral hypoglycaemics was admitted to our emergency department presenting with abdominal pain, nausea and multiple episodes of vomiting which had commenced 24 h earlier. Physical examination revealed a distended abdomen and mesogastrium tenderness. All the laboratory investigation was normal apart from risen leukocytes count. Orthostatic plain abdominal X-ray showed distended small-bowel loops. Abdomen Computed Tomography (CT) scan showed many dilated jejunum loops with air-fluid levels. A small bowel loop filled with faecal material was found within the mesogastrium (Fig. 1) and which marked the site of obstruction.

An exploratory laparotomy was performed was found a giant Meckel's diverticulum containing a phytobezoar (Figs. 2 and 3). A Small bowel resection of the tract containing MD was performed together with a manual single layer end to end anastomosis. The histological report confirmed MD. The post-operative period was unremarkable with passage of flatus during the 3rd day and restored oral intake in 5th post-operative day. Broad spectrum antibiotics were administrated for 6 days and also venous thromboembolism prophylaxis was maintained for 10 days, according to our internal guideline.

3. Discussion

The occurrence of gastrointestinal phytobezoar is related to diet habits and therefore presents a regional range due to a different

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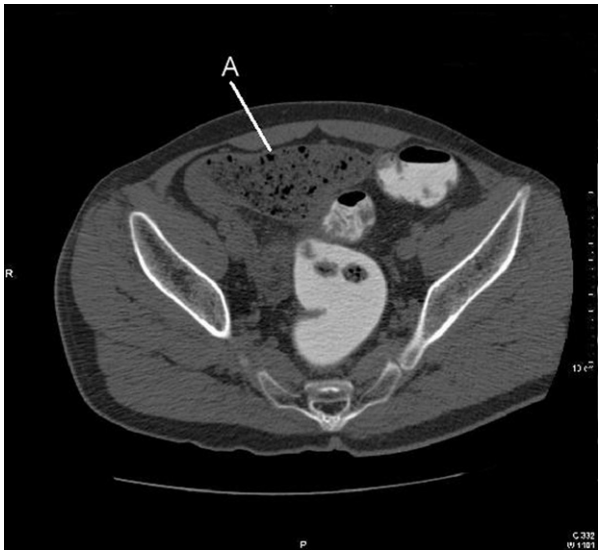

Fig. 1. CT scan: A indicate the giant Meckel's diverticulum.

Fig. 2. Laparotomy with evidence of Meckel's diverticulum.

Fig. 3. Laparotomy: evidence of phytobezoar within Meckel's diverticulum.

ingestion of bezoar-inducing foods. For instance in China and Spain the Authors report high rate of gastrointestinal bezoars related to consumption of persimmon, oranges and mushroom.[7,8]

Other factors include previous gastric surgery, poor mastication, and overindulgence of foods with high fibre contents[9] as well as delayed gastric emptying because of diabetes, mixed connective tissue disease or hypothyroidism.[10]

Patients can be completely asymptomatic or with different clinical patterns. Abdominal pain, epigastric distress, vomiting and nausea, small bowel-obstruction are the main clinical presentations. Feelings of fullness or bloating, anorexia with weight loss and even gastrointestinal haemorrhage could be found.[10]

Bowel obstruction due to a phytobezoar in a Meckel's diverticulum is rare: only 7 cases have been reported in literature.[11]

The clinical assessment on its own might not be enough to get a correct diagnosis. It is mandatory to arrange several radiological investigations. About 50–70% of small bowel obstructions are diagnosed by abdominal radiography by showing dilated bowel loops, air-fluid levels and thickened bowel wall.[12] Barium enema could be helpful in non obstructive bezoar's case; the obstruction's shown like an intraluminal-filling defect. Barium enema could sometimes show a mottled appearance similar to villous tumor.[13] On ultrasound examination bezoars appear as an intraluminal mass with an hyperechoic arclike surface and a marked posterior acoustic shadow appears.[14] CT scan, demonstrating dilated small bowel loop and well-defined round, heterogeneous intraluminal mass in distal segment, is completely diagnostic. The mass could be outlined by the bowel wall and present characteristic internal gas bubbles.[15] CT scan is useful to localize the bezoar as well as to identify complications like perforation and obstruction. Furthermore the advantage of CT scan over barium enema is to make diagnosis avoiding oral contrast material.[10,16,17]

Oesophagogastroduodenoscopy is effective and useful to diagnose gastric bezoars.

The treatment of phytobezoar could be either medical or surgical. The medical approach consists of administration of large amount of oral fluid in association with antispasmodic agents in case of little bezoar with no signs of obstruction. Other non-surgical treatments could be performed through endoscopic electrosurgical knife[18] or extracorporeal lithotripsy, both to fragment bezoars.[19] All these procedures are often incomplete and expose to iatrogenic complications such as oesophageal-gastric injuries (perforation–bleeding tear–haematoma) or intestinal obstruction due to distal migration of daughter fragments[20] Surgical treatment of bezoar is performed by removing the same during gastrostomy and/or enterotomy.[4]

Morbidity and mortality rate of the surgical approach is quite high as demonstrated by Authors like Erzurumlu et al.[20] (morbidity 32.14%–mortality 14.28%) and Ho et al.[21] (morbidity 22%–mortality 2%).

In our report the phytobezoar Meckel's diverticulum obstruction could have been related either to ethnic alimentary habits (Chinese food)[7,8] or to concomitant pathology (diabetes).[10] Our patient underwent explorative urgent laparotomy that confirmed the obstruction due to distended Meckel's diverticulum phytobezoar that induced small bowel compression, ending up with a clinical and radiological small bowel obstruction.

4. Conclusion

Nearly 80% of the patients affected by Meckel's diverticulum are asymptomatic.

About 6.4% of them develop some complications related to diverticulum and the phytobezoar represents one of them with only few cases described in the literature.[22]

Phytobezoar must be suspected in the presence of predisposing factors such as previous gastric surgery, poor mastication, overindulgence of foods with high fibre contents and, also, delayed gastric emptying due to diabetes, mixed connective tissue disease or hypothyroidism. The imaging studies hardly lead to a definitive diagnosis of phytobezoar within MD. The CT findings are in keeping with bezoar's occlusion, demonstrating a not homogeneous mass consisting of gas and soft tissue at the site of obstruction and

abrupt luminal collapse beyond the lesion. Explorative laparotomy or laparoscopy must be considered in these cases.

Conflict of interest

There are no conflicts of interest.

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Ethical approval

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Authors' contribution

Roberto Bini, Alfredo Addeo, Renzo Leli: study design, writing the article, manuscript review, manuscript editing.
Fabrizio Quiriconi, Marcella Fusca, Franca Loddo and Aurelio Tello: data collection and data analysis, and literature search.

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